TFW 2811

PATENT APPLICATION
Docket No: 14321.67

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
	Nobuhiro Nunoya et al.	)
Serial No.:	10/527,355	) Art Unit
		) 2811
Filed:	March 7, 2005	)
Confirmation No.:	4938	)
For:	OPTICAL SEMICONDUCTOR DEVICE AND OPTICAL SEMICONDUCTOR INTEGRATED CIRCUIT	)

CERTIFICATE OF DEPOSIT UNDER 37 C.F.R. § 1.8

I hereby certify that the following documents are being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450, on the 5th day of December 2005.

- Transmittal for Information Disclosure Statement (3 pages)
- Information Disclosure Statement (5 pages)
- Form PTO-1449 listing 15 references (2 pages)
- A copy of each of the references listed on the Form PTO-1449
- Postcard

Respectfully submitted,

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TRANSMITTAL FOR INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing and pursuant to 37 C.F.R. § 1.97 is an Information Disclosure Statement, which includes the following statements, if any, required variously by 37 C.F.R. § 1.98:

X Statement of relevance of selected cited references not in the English language which are not translated.

___ Statement that selected cited references are substantially cumulative of an enclosed or previously submitted reference.

___ Statement that selected cited references were previously cited by or submitted to the United States Patent and Trademark Office in a prior application which is relied upon for an earlier filing date under 35 U.S.C. § 120.

* Admitted only in California
§ Admitted only in Virginia

A. Additional Materials Required Due to Content of Information Disclosure Statement

Transmitted are the following documents in addition to the Information Disclosure Statement as required variously under 37 C.F.R. § 1.98:

X Form PTO-1449 listing 15 reference submitted for consideration.

X A copy of each of the references listed on the Form PTO-1449.

___ English translations of ___ (___) of the references listed on the Form PTO-1449 which are not in the English language.

___ Copies of the following documents from the prosecution of a previous, related application:

___ Form PTO-1449 AND INFORMATION DISCLOSURE STATEMENT; and

___ Form PTO-892

B. Additional Materials Required Due to Timing of Filing of Information Disclosure Statement

The transmitted Information Disclosure Statement is being filed within one (1) of the following four (4) time periods:

I. X Prior to the later of either three (3) months following the filing date or the mailing of a first Office Action. Accordingly, no materials other than those listed above are enclosed.

II. ___ Following the latter of either three (3) months following the filing date or the mailing of a first Office Action, but before the mailing of a final Office Action or a Notice of Allowance. Accordingly, to secure consideration thereof, one (1) of the following is also enclosed:

___ Promptness Certification; or

___ Check No. _____ in the amount of ___ constituting the submission fee set forth in 37 C.F.R. § 1.17(p).

III. ___ After the mailing of a Notice of Allowance, but before payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:

___ Promptness Certificate;

___ Petition for Consideration; and

___ Check No. in the amount of ___ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).

IV. ___ After payment of the Issue Fee. Accordingly, in order to secure consideration thereof, each of the following are also enclosed:

___ Petition to Withdraw from Issue; and

___ Check No. ___ in the amount of ___ constituting the petition fee set forth in 37 C.F.R. § 1.17(i)(1).

C. Fees

The Commissioner is hereby authorized to charge payment of or any deficiency in the following fees associated with this communication, or to credit any overpayment thereof, to Deposit Account No. 23-3178. A duplicate copy of this letter is enclosed.

_X_ Any fee required in relation to filing of this letter or any documents transmitted therewith.

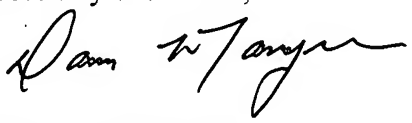
___ The submission fee set forth in 37 C.F.R. § 1.17(p) in the event that 37 C.F.R. § 1.97(c) applies and the Examiner is not satisfied that any Promptness Certificate submitted meets the requirements of 37 C.F.R. § 1.97(e).

___ The submission fee set forth in 37 C.F.R. § 1.17(p).

___ The petition fee set forth in 37 C.F.R. § 1.17(i)(1).

Dated this 5th day of December 2005.

Respectfully submitted,



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Enclosures
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INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. § 1.97

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

Sir:

Please find, pursuant to 37 C.F.R. § 1.98(a)(1), the enclosed Form PTO-1449 which contains a list of all patents, publications, or other items that have come to the attention of one or more of the individuals designated in 37 C.F.R. § 1.56(c). While no representation is made that these references may be "prior art" within the meaning of that term under 35 U.S.C. §§ 102 or 103, the enclosed listed references are disclosed so as to fully comply with the duty of disclosure set forth in 37 C.F.R. § 1.56.

Moreover, while no representation is made that a specific search of office files or patent office records has been conducted or that no better art exists, the undersigned attorney of record believes that the enclosed art is the closest to the claimed invention (taken in its entirety) of which the undersigned is presently aware, and no art which is closer to the claimed invention (taken in its entirety) has been knowingly withheld.

In accordance with 37 C.F.R. §§ 1.97 and 1.98, a copy of each of the listed references or relevant portion thereof that is not a US patent document is also enclosed.

Statement of Relevance of References Listed
Unaccompanied by English Translation
Under 37 CFR § 1.98(a)(3)

In accordance with 37 CFR § 1.98(a)(3), the following concise explanation of the relevance of each listed reference that is not in the English language and unaccompanied by a translation into English is provided.

Japanese Patent JP 05-048198: PURPOSE: To form a second harmonic light emitting device. CONSTITUTION: The titled device is provided with horizontal semiconductor laser structure 12, a second optical laminated harmonic generation region 13 and a slanting type reflected plane 10 which leads oscillation laser light to the second harmonic generation region 13. The phase conformity conditions are satisfied by a grating 5 and multilayer film structure. The device is integrated with the laser and enables second harmonics to be effectively generated.

Japanese Patent JP 06-338650: PURPOSE: To make possible an increase of harmonic emission output power and the stabilization of the power by a method wherein the active layer formation surface of a semiconductor laser and the optical waveguide formation surface of an optical wavelength conversion element face a submount and the wavelength conversion part of the optical wavelength conversion element is thermally insulated from heat generated from the laser. CONSTITUTION: An active layer 23 formation surface 24 of a semiconductor laser 21 and an optical waveguide 2 formation surface 25 of an optical wavelength conversion element 22 face a submount 20. As a wavelength conversion part 26 for converting the fundamental wave into a harmonic is not brought into contact to the submount 20, it is thermally insulated from heat generated from the laser 21. As a result, there is no effect of the heat from the laser 21. When the laser 21 is driven and a semiconductor laser beam emitted from the active layer 23 as a fundamental wave P1 is made to couple directly from an incident surface 10 of the element 22 to the optical waveguide 2, the wave P1 is propagated in a single mode, is converted into a harmonic P2 in the part 26 in the waveguide 2 and a blue laser beam is taken out from an emitting surface 12.

Japanese Patent JP 02-074909: PURPOSE: To constitute a waveguide type optical circuit which maintains stable characteristics even if ambient temp. changes by using a dielectric material which constitutes a light guide film and has a negative temp. coefft. of the refractive index thereof to obtain the negative or nearly zero change rate of the dependency of the optical path length of the optical waveguide on temp. CONSTITUTION: The dielectric waveguide film of the optical waveguide formed by depositing the dielectric waveguide film consisting of a core layer 5 enclosed by clad layers 4a, 4b on a dielectric flat plate substrate 3 is at least partly constituted of the dielectric material having the negative temp. coefft. dn/dT of the refractive index (n). The nearly zero or negative change rate of the dependency of the optical path length of the optical waveguide on temp. is obtd. by constituting the dielectric flat plate substrate 3 of the dielectric material having the coefft. alpha of linear expansion which satisfies the conditions of equation I. The change of the optical path length by a change in the ambient temp. is substantially prevented in this way and the waveguide

type optical circuit having the characteristics stable to the change in the ambient temp. is constituted in this way.

Japanese Patent JP 08-211342: PURPOSE: To make it possible to lower end face reflectivity and to lessen the coupling loss with fibers by providing the above element with a mode conversion region having end faces diagonal with a direction for guiding light. CONSTITUTION: This semiconductor optical function element 20 is constituted by providing the optical function part 22 on a substrate 1 laminated with a buffer layer of InP, etc., on a semiconductor substrate of InP, etc., with a waveguide type light emitting element 2 laminated with an active layer (core layer) of InGaAsP, etc., a clad layer of InP, etc., and a contact layer of InGaAsP, etc., and a waveguide 3 laminated with a core layer of InGaAsP, etc., and a clad layer of InP, etc., for changing a beam spot diameter in the state of plane waves to the mode conversion region 23 by inclining both at an angle &theta with the normal direction of the end faces 21 of the substrate 1. The beam spot diameter is expanded in the case of the guided light from the optical function part 22 toward the fiber to be connected. The beam spot diameter is reduced in the case of the guided light from the fiber to be connected toward the optical function part 22.

Japanese Patent JP 09-036495: PROBLEM TO BE SOLVED: To realize a single current continuous wavelength control where jumping of mode is eliminated by introducing a periodic structure comprising a region where the refractive index is varied by current injection, voltage application or temperature and a region where the refractive index is not varied into a DBR region. SOLUTION: A light confinement layer 2, an etch stop layer 3, a multiple quantum well layer 4, a light confinement layer 5, and a p-InP layer 6 are grown sequentially on a substrate 1. The p-InP layer 6, light confinement layer 5 and multiple quantum well layer 4 are then removed by selective etching from a phase regulation area. Subsequently, a tuning layer 7 and a p-InP layer 6 are grown selectively only in the phase regulation area and DBR region. Finally, a stripe diffraction grating pattern is formed in the DBR region and a dielectric layer 8 is buried in a valley. The diffraction grating 20 in the DBR region is formed of the tuning layer 7 where the refractive index is varied by current injection and the dielectric layer 8 where the refractive index is not varied.

Japanese Patent JP 09-092924: PROBLEM TO BE SOLVED: To provide a stable semiconductor laser whose oscillation wavelength is fixed even when the operation temperature changes. SOLUTION: At least a part of an optical resonator constituting a semiconductor laser is constituted of dielectrics 13 and dielectrics 14 which have negative refractive index change to temperature. For example, the dielectrics 13 is lithium fluoride whose refractive index is -1.6× 10<-5> K<-1> , and the dielectrics 14 is calcium fluoride whose refractive index is -1.0× 10<-5> K<-1>.

Japanese Patent JP 09-331102: PROBLEM TO BE SOLVED: To provide a small wavelength multiplexing light source of high output whose condensing/integrating design is easy by devising a light-emitting end structure of a semiconductor laser array. SOLUTION: A wavelength multiplexing light source comprises a semiconductor laser array 11 and a channel wave guiding type confluence device 12. The light-emitting end surface of each laser 101-108 of the semiconductor laser array 11 is formed in a plane perpendicular to a substrate of the wavelength multiplexing light source, and further, relating to at least one of the semiconductor laser, it is inclined against its resonator axis. Beams of light from the respective lasers 101-108 of the semiconductor laser array 11

are emitted at specified angles, and made to join each other with the channel wave guiding type confluent device 12 which is formed of a material different from the semiconductor laser array 11, and then emitted from an output waveguide part 13.

Japanese Patent JP 2000-019345: PROBLEM TO BE SOLVED: To eliminate the effect that optical switching performance is affected by a non-waveguided beam caused by optical waveguide discontinuity substantially inevitable in hybrid optical integration. SOLUTION: This optical integrated module is constituted so that tilted optical waveguide parts of incident/emission both end surfaces of an optical waveguide 132 of an optical waveguide device 131 are formed to be curved toward the same side for a straight line of an optical waveguide platform 133 in the longitudinal direction, and further, the input optical waveguide 134 and the output waveguide 135 of the optical waveguide platform 133 are formed to be curved toward the same direction also answering to the curved of the optical waveguide 132 of the optical waveguide device 131. The non-waveguided beam caused at the time of being waveguided from the optical waveguide 134 to the optical waveguide device 131 is made incident on the output optical waveguide 135 by a deep angle exceeding the effective opening of the output optical waveguide 135, and optical connection of a cross talk component for the output optical waveguide 135 is suppressed. Thus, only optical connection efficiency for the non-waveguided beam is selectively and remarkably effectively suppressed while suppressing the deterioration of connection efficiency for a signal beam as much as possible.

Japanese Patent JP 2000-223787: PROBLEM TO BE SOLVED: To provide a semiconductor laser which displays at least, one effect out of an effect by which the length of a resonator or the equivalent refractive index of a waveguide becomes nearly constant with reference to a temperature change, and an effect which restrains an oscillation threshold current from being changed with reference to the temperature change. SOLUTION: A semiconductor layer 31 in which the temperature coefficient of a refractive index is negative is used so that at least, an effect is displayed out of an effect by which the length of a resonator or the equivalent refractive index or a waveguide becomes nearly constant with reference to a temperature change, and an effect which restrains an oscillation threshold current from being changed with reference to the temperature change. When the semiconductor layer 31 is arranged in a region in which a laser beam exists, both effects can be expected. When the semiconductor layer is arranged in a region in which no laser beam esists, the effect which restrains the oscillation threshold current from being changed can be expected.

Japanese Patent JP 2002-014247: PROBLEM TO BE SOLVED: To eliminate the temperature dependence of a distributed reflection optical waveguide or an optical device including the waveguide and to obtain desired characteristics. SOLUTION: The distributed reflection optical waveguide is obtained by alternately connecting in semiconductor optical waveguides 8 and polymer optical waveguides 9 in series in the direction of the optical axis. Materials and waveguide length are selected to compensate the temperature coefficient of the refractive index of the semiconductor optical waveguides 9 and the temperature coefficient of the refractive index of the polymer optical waveguides 9 to control the optical length in one period of the structure of the distributed reflection optical waveguide constant, thereby eliminating the temperature dependence. Or, materials and

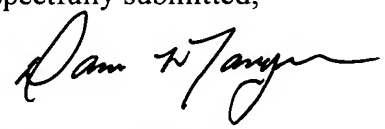
waveguide length of the semiconductor optical waveguides 8 and polymer optical waveguides 9 are selected, thereby obtaining desired temperature dependence.

Japanese Patent JP 2002-076513: PROBLEM TO BE SOLVED: To reduce the temperature dependency of reflection characteristics of a DBR mirror concerning a temperature independent distributed Bragg's reflecting mirror and a planar optical element. SOLUTION: At least a pair of film 2 having the positive temperature coefficient of refraction factor and film 3 having the negative temperature coefficient of refraction factor are laminated, and the wavelength of one pair is made into the half integer multiple of a central wavelength so that a distributed Bragg's reflecting mirror can be configured.

Japanese Patent JP 2002-328244: PROBLEM TO BE SOLVED: To provide an optical component which suppresses loss and reflection at an optically connected part with a simple and small structure. SOLUTION: The optical component 1 having an optical waveguide is a single mode optical waveguide having an input part and an output part of light in the vicinity of the end part of the optical waveguide and is provided with at least one optical waveguide structure 1-1 having a part 1-3a to which a light field incompatible with a transmission mode is made incident and a part 1-1a which has a prescribed length and adjusts the field diameter and the phase of an emitting light.

Dated this 5th day of December 2005.

Respectfully submitted,



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Form PTO-1449 Sheet 1 of 2

Applicant: Nobuhiro Nunoya et al. Confirmation No.: 4938

Serial No.: 10/527,355 Att'y Docket No.: 14321.67

Filing Date: March 7, 2005 Art Unit: 2811

For: OPTICAL SEMICONDUCTOR DEVICE AND OPTICAL SEMICONDUCTOR INTEGRATED CIRCUIT

INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANT

U.S. Patent Documents

Examiner Initial*	Document Number	Issue Date	Name

Foreign Patent Documents

Examiner Initial*	Document Number	Publication Date	Country or Patent Office	Translation
_____ 1	05-048198	02/26/1993	Japan	No
_____ 2	06-338650	12/06/1994	Japan	No
_____ 3	02-074909	03/14/1990	Japan	No
_____ 4	08-211342	08/20/1996	Japan	No
_____ 5	09-036495	02/07/1997	Japan	No
_____ 6	09-092924	04/04/1997	Japan	No
_____ 7	09-331102	12/22/1997	Japan	No
_____ 8	2000-019345	01/21/2000	Japan	No
_____ 9	2000-223787	08/11/2000	Japan	No
_____ 10	2002-014247	01/18/2002	Japan	No
_____ 11	2002-076513	03/15/2002	Japan	No
_____ 12	2002-328244	11/15/2002	Japan	No

Examiner: Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Applicant:	Nobuhiro Nunoya et al.	Confirmation No.: 4938
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Other Documents
(including author, title, pertinent pages, etc.)

Examiner Initial*

_____ 13 Kazuo Sakai et al., *1.5 μm Range InGaAsP/InP Distributed Feedback Lasers*, IEEE Journal of Quantum Electronics, Vol. QE-18, No. 8, August 1982, pp. 1272-1278.

_____ 14 Hajime Asahi et al., *New III-V Compound Semiconductors TlInGaP for 0.9 μm to over 10 μm Wavelength Range Laser Diodes and Their First Successful Growth*, Jpn. J. Appl. Phys., Vol. 35, 1996, pp. L876-L879.

_____ 15 K. Tada et al., *Temperature Compensated Coupled Cavity Diode Lasers*, Optical and Quantum Electronics, Vol. 16, 1984, pp. 463-469.

References Cited by Applicants

While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all citations submitted in conformance with 37 C.F.R. § 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the spaces provided on this form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the Examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines AND has not been considered. A copy of the submitted form, as reviewed by the Examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the Examiner will be printed on the issued patent in the same manner as references cited by the Examiner on Form PTO-892.

The reference designations "A1," "A2," etc. (referring to Applicant's reference 1, Applicant's reference 2, etc.) will be used by the Examiner in the same manner as Examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

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Examiner: Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609, draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.